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AR609

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Grand Junction Office
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OCT 21 1998

Mr. Paul Mushovic
Environmental Protection Agency, Region VIII
Suite 500, Mail Stop 8HWM–FF
999 18th Street, Denver Place
Denver, CO 80202–2405

Mr. David Bird
State of Utah Department of Environmental Quality
Division of Environmental Response and Remediation
168 North 1950 West
Salt Lake City, UT 84116

Subject: Transmittal of the Final *Monticello Mill Tailings Site, Operable Unit III, Remedial Investigation*

Dear Mr. Mushovic and Mr. Bird:

Enclosed are three copies of the subject document. Your comments submitted on the draft Remedial Investigation document have been incorporated. Responses to the state of Utah's comments will be submitted separately.

If you have any questions, please contact me at (970) 248-7612.

Sincerely,

Donald R. Metzler
Technical/Project Manager

Enclosure (3)

cc w/o enclosure:
J. Cross, EPA
R. Plieness, DOE-GJO
M. Butherus, MACTEC-ERS
MSG 2.3.2[PjM/MSG] (thru J. Glasgow)

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OU III AR 609

EPA and UDEQ Comments on the Draft Document Entitled:

Monticello Mill Tailings Site Operable Unit III - ALTERNATIVES ANALYSIS

GENERAL COMMENTS

If a decision for "no action" is eventually concurred on by EPA, UDEQ and DOE for soils and sediments down gradient of the millsite (i.e., all or any segment - Upper, Middle or Lower canyon) then the "no action" should be documented in the ROD for OU III. Only those segments where action is proposed would be addressed in the action memorandum. EPA would also recommend that if the decision in any or all parts of the canyon were for establishment of institutional controls then DOE should prepare an action memorandum (i.e., institutional controls would be considered an action) and document the final institutional controls concurred upon in the Record of Decision.

The State of Utah submitted the following comment:

The statement is made that if the risk assessment shows acceptable risk, then ARARs don't have to be met", is an error. The requirements of ARARs at a site are not dependent upon the results of risk assessment. Alternative Concentration Levels, ARAR waivers, or Supplemental Standards may be applied for, and if granted ARARs will be met through these mechanisms. Please change the document in all applicable locations.

EPA submits the following comment to clarify EPAs position on this matter:

The statement commonly made that if the risk assessment shows acceptable risk, then ARARs don't have to be met, is not entirely correct. The requirements to meet ARARs at a site are not entirely dependent upon the results of risk assessment. Generally when the cumulative risks are less than 10E-4 and the comparison of exposure concentrations to chemical-specific standards (MCL's are not exceeded) indicates that there is no unacceptable risk to human health or the environment and that no remedial action is warranted ("No-action determination"), then the CERCLA Section 121 cleanup standards for selection of a Superfund remedy, including the requirement to meet applicable or relevant and appropriate requirements (ARARs) are not triggered. However, risk managers may also decide that a lower level of risk to human health is unacceptable and that remedial action is warranted where, for example, there are uncertainties in the risk assessment or a chemical specific standard is violated (i.e., when MCL's are exceeded in Ground-water, remedial action is generally warranted). Alternative means for complying with ARARs include ARAR Waivers, Alternative Concentration Levels (ACLs), and supplemental standards. ARAR Waivers are justified under specific criteria in the NCP, ACLs are site specific and supplemental standards are available as described in 40CFR Part 192. Please change the document accordingly.

EPA and UDEQ note that our comments on the Human Health and Ecological Risk Assessments need to be incorporated into the executive summary. It is doubtful that any of the comments submitted on the baseline risk assessments have the potential to substantially change estimates of risk to human and ecological receptors. However, it is only prudent to state that this review was done under the assumption that Region 8 comments on the Baseline Risk Assessments would NOT alter the characterization of risk as presented in the Alternatives Analysis.

EPA believes that it is important that the document discuss the development of the Central Tendency (CT) scenario and indicate why the CT scenario as developed may itself be a conservative estimate of exposure. It may be appropriate to discuss the CT scenario in section 2.2 - Human-Health Risk Assessment.

Please note that there are a number of references in the document indicating distances (e.g., see comments 51 and 53) that do not appear to be accurate and in several instances different sections of the document describing the identical segment have different measurements. Please check the text (including the executive summary) and make corrections as necessary.

In assessing the costs associated with institutional controls, (i.e., specifically the purchase of private properties) DOE has assumed that the land owner will be willing to sell only that part of the parcel that extends into the canyon and is contaminated. It is unlikely that a land owner would divide property in such a manner. Furthermore, if institutional controls are deemed necessary, it is in DOE's interest to begin the development of such controls immediately to make certain we have assurances that the institutional controls will be implementable, protective and acceptable to EPA, UDEQ and stakeholders. We will require that any institutional controls proposed as part of a remedy be substantially completed prior to signing of the Action Memorandum.

DOE also needs to consider whether the costs and methods for implementing institutional controls result in a "taking" and DOE may be responsible for providing compensation to the private land owners. DOE is also reminded that monitoring surface and ground-Water down-gradient of the millsite whether for long term "monitored natural attenuation" or for confirming performance of an active treatment system may have costs associated with access.

In the general discussion of alternatives, DOE needs to indicate that the alternative selected for one segment of the canyon may be different than that selected for another segment of the canyon. DOE also needs to indicate that combinations of the alternatives; (e.g., partial remediation and or hot spot remediation together with some level of institutional control) may be the preferred alternative.

Please provide in this document an explanation of how "wetlands" on the various figures and maps were defined.

Response: *DOE agrees with the approach for the action memorandum.*

The text was modified to clarify that if no remedial action were warranted (i.e., the No Action Alternative was acceptable) ARARs would not be triggered.

Comments made on the baseline risk assessment were incorporated into the document (both in the executive summary and Section 2.0).

A discussion of how central tendency risk was developed and that it may be a conservative estimate of risk was added to the text in Section 2.2. The executive summary was revised to reference Section 2.2.

References to distances were corrected to be consistent throughout the document.

The cost estimate for institutional controls was revised to be a range of costs. The lower range of the estimate includes only the net present worth of annual costs. The upper range of the estimate includes the cost of buying all the land in a reach.

The text in Section 5.0 describing institutional controls identifies that owners may be compensated for zoning changes, deed annotations, or restrictive easements.

A statement was added to the introductory paragraphs of Sections 6, 7, and 8 explaining that the alternatives selected for different segments of the canyon may be different from each other.

Discussion was added to explain how wetlands on the various figures and maps were defined.

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SPECIFIC COMMENTS

1. **Page xii, Lower Montezuma Creek, 2nd sentence** : This sentence does not make sense. It appears that several phrases are missing and/or that two sentences may have been intended.

   It is important to indicate in the Nature and Extent of Contamination that insignificant levels of contamination were observed down gradient of the Lower Montezuma Creek canyon; and that at the Montezuma Creek canyon site (above the confluence of Verdure Creek) that levels indicative of background concentrations were recorded.

   Response: *The sentence and paragraph was modified to read "The southern boundary of Lower Montezuma Creek represents the downgradient extent of Ra-226 contamination, which is approximately 1,800 feet below the confluence of Vega Creek with Montezuma Creek. Sampling results confirmed that Ra-226 contamination (i.e., Ra-226 activities greater the 5 pCi/g above background) did not extend beyond the Lower Montezuma Creek boundary. Insignificant levels of Ra-226 contamination (i.e., Ra-226 activities less than 5 pCi/g above background) were observed downgradient of the Lower Montezuma Creek boundary and Ra-226 activities reduce to background levels near the confluence of Verdure Creek with Montezuma Creek."*

2. **Page xiii, Figure ES-1 OU III Soil and Sediment Area**: The figure does not show the upper boundary for the Upper Montezuma Creek section. It is not clear what the acreage area for upper middle and lower Montezuma Creek is referring to. Is it the contaminated area? If so please indicate this on the figure.

   Response: *The upper boundary for Upper Montezuma Creek soil and sediment area has been added to the figure. Also, the acreages given for Upper, Middle, and Lower Montezuma Creek have been explained as the Acreage within the OU III Soil and Sediment Study Area (identified as the hatched area on the figure). These same changes were made to Figure 1.3–2.*

3. **Page xv, Human Risk Assessment, third paragraph**: DOE should include several sentences explaining in greater detail the RME and CT and indicate where in the document a complete discussion of the terms appears.

   Response*: As agreed on resolution of comments to the human health risk assessment, greater detail explaining the RME and CT will not be included in the executive but was added to Section 2.2, Human-Health Risk Assessment.*

4. **Page xvii, Ecological Risk Assessment, second bullet**: The argument is made here that since deer mice are able to readily reoccupy the OU III soil and sediment area (presumably from being killed by the contaminants in question), actual risks likely are of no concern. The ability of a species to reoccupy an area should not be the focus of this discussion. Information about the risks to the receptor in question should be the focus. Please note that changes made here must also be incorporated in Section 2.3. In revising the text please consider the following:

(a) Not many deer mice typically occupy contaminated sediments and therefore the reference to sediments should be removed.

(b) Note that the discussion of risk on page 2-27 for deer mice is much more appropriate, and is in a strict sense, contrary to the discussion in the executive summary because of specific comments which were previously made on the ERA.

The text states "if adverse impacts occur to deer mouse populations living in this area, deer mice from adjacent areas will readily reoccupy contaminated areas. Therefore, overall impacts to the population will be minimal and actual risks are more likely of "no concern".

That's one interpretation, however, what the authors have just described could also be thought of an immigration, or dispersal, sink for small mammal *populations*. The term population is used rather loosely throughout the discussion and perhaps clarifying individual and population effects may clear up the ambiguity. Furthermore, one could argue that a creek surrounded by steep canyon walls may not have much immigration of small mammals into the canyon and therefore have more pronounced effects on populations in the canyon. Although the overall conclusion of low risk is probably correct, this part of the argument is weak and would suggest its deletion."

Response: *(a): The text was revised to delete reference to sediments. (b): The text "if adverse impacts...are more likely of no concern" has been deleted.*

5. **Page xvii, Ecological Risk Assessment, third bullet. Discussion of risks to muskrats and spotted bats.** It seems appropriate to add a statement about the presence of these species. For example: "Furthermore, currently there is little evidence that viable populations of either muskrats or spotted bats should, or do inhabit the site."

   Please note that the goshawk is discussed later on in the document. However, no summary discussion about the goshawk is included in the executive summary.

   Response: *Statements have been added that peregrine falcon and muskrat do not currently inhabit the site. However, 1995 survey results indicate that the spotted bat is present in the OU III area.*

   The northern goshawk was not chosen as a receptor of concern for the ecological risk assessment and is therfore not discussed int his summary section. However, it is a state-sensitive species and it is appropriate to discuss the goshawk in the sections evaluating short-term effectiveness. No text revisions were made.

6. **Page xvii, Ecological Risk Assessment, fifth bullet, second sentence**: Consider changing the text to "histopathological analyses did not indicate any COC-related lesions".

   See comment on histopathological Categories of Adverse Effects, page 5-35, of the Ecological Risk Assessment. The statement: "histopathological analyses show a lack of adverse effects" is too vague of a statement. Histopathology by light microscopy is a

relatively gross indication of adverse effects even in a weight of evidence as appropriately done in this example. Consider changing the text to "histopathological analyses did not indicate any COC-related lesions."

Response: *The text was revised as suggested.*

7. **Page xvii, Ecological Risk Assessment, sixth bullet, second sentence**: The statement is made here that "the dose modeling for this receptor is inaccurate." Please explain in which way the dose modeling was inaccurate.

   Response: *The statement has been revised to read "For the southwestern willow flycatcher, results of histopathological and chemical analysis of tissue samples contradict the modeled estimates of risk, indicating that the predicted risk is overly conservative."*

8. **Page xviii, Upper Montezuma Creek Alternative 2**: There would appear to be a range of alternatives for institutional controls that may not require outright purchase of the land by DOE. DOE should refer the reader to the text in this document, or in the RI/FS where a discussion of the alternative institutional controls are addressed. The wording in this section should indicate that zoning, deed annotation, restrictive easements (DOE purchasing an interest in the property), and/or DOE purchase of the entire property are the means by which DOE can ensure that future uses remain protective.

   Response: *The paragraph has been modified to include the range of institutional controls and to explain that an entire parcel of land may have to be purchased initially. This revision also was made to Alternatives 2 for Middle and Lower Montezuma Creek.*

9. **Page xviii, Table ES-2, Upper Montezuma Creek Alternatives**: DOE needs to change the partial remediation alternative to that which was discussed and concurred upon at the FFA meeting and subsequent telephone conversations. Alternative 3 "Remediation to an alternative cleanup level" including the cleanup of a pond in the western segment of the inactive beaver ponds.

   Response: *The name of Alternative 3 in the table was changed to "Alternative 3, Remediation to an Alternate Cleanup Level". Also, the excavation volume was changed to 14,300 yd^3 (based on excavating to 15 pCi/g Ra-226 instead of only the top 12 inches). Discussion of the cleanup of the pond in the western segment of the inactive beaver ponds will be added to the description of Alternative 3 (page xx of the draft report).*

10. **Page xviii, Table ES-3, Evaluation and Comparison of Alternatives for Upper Montezuma Creek**: There is a need to modify or explain several NCP evaluations in the table.

    "Alternative 2 Institutional Controls - Implementability" DOE needs to expound on the significant administrative issues. EPA does not foresee them as being difficult. It is DOE's reluctance to pursue the option which makes it appear to be administratively difficult. We would concur that it is more difficult than Alternative 1, however when one looks at the

problems associated with the remediation process (i.e., owner negotiation, design, partial remediation, construction, revegetation and the implementation of supplemental standards, deed annotation and LTSM, the alternative is much easier to implement administratively than alternatives 3, 4, and 5.

"Alternative 2 Institutional Controls - Cost" There are a range of costs with institutional controls and where DOE does not have to purchase the property outright the costs should be significantly lower.

"Alternative 5 Protection of Human Health and the Environment. There is need to complete the thought "Achieves the lowest . . . ". **What???**

DOE Response: *The implementability evaluation for Alternative 2 was changed as recommended.*

The costs were revised to list a range of costs for institutional controls. Also, a footnote was added to the net present cost of Alternative 2 to explain the range of costs. The text was modified to include this discussion.

The sentence was completed to read "..., achieves the lowest residual human health risk."

11. **Page xx, Upper Montezuma Creek Alternative 3**: EPA and UDEQ do not concur with the decision to only excavate to a maximum depth of 12 inches.. If remediation is initiated in the floodplain, on stream banks and/or in stream sediments the remedial action objective should be to remove all contamination exceeding the clean-up criteria established. DOE should revise this alternative or prepare another alternative indicating the anticipated volume of contaminated materials that needs to be excavated and hauled to the repository.

    Please also provide a table that indicates the correlation of the 35, 50, 65, 80, and 95 microroentgen per hour to the estimated pCi/g that each number would correspond to.

    Response: *Alternative 3 was modified to have the depth of excavation based on 15 pCi/g Ra-226 instead of 12 inches. Based on conversations at the FFA, DOE assumes that EPA and the State are requesting this change instead having the depth of excavation based on the surface cleanup level. As stated in the comment, the depth of excavation for a 35 uR/h surface cleanup would be 18 pCi/g Ra-226, the Ra-226 activity that corresponds to a surface gamma level of 35 uR/h.*

    Instead of adding a table, DOE prefers to add the Ra-226 activity that corresponds to surface gamma levels to the text (i.e., the first paragraph of page xx of the draft report).

12. **Page xxiii, Table ES-3, Evaluation and Comparison of Alternatives for Middle Montezuma Creek**: See comment 10. The comments pertaining to implementability and cost also apply here. The cost for outright purchase of the middle canyon seems excessive.

Response: *DOE assumes this comment applies to Table ES-5 instead of ES-3. Revisions similar to those made to Table ES-3 were made to Table ES-5. Also, the Compliance with ARARs evaluation was revised to be similar to Table ES-3.*

13. **Page xxiii, Table ES-7, Evaluation and Comparison of Alternatives for Lower Montezuma Creek**: "Compliance with potential ARAR's" - Please explain how Alternative 2 - Institutional Controls and Alternative 3 - Partial Remediation comply with ARAR's. See comment 10. The comments pertaining to implementability and cost also apply here.

"Cost" EPA and UDEQ find the costs for partial remediation to be excessive. We also believe costs identified for the 5/15 remediation are excessive. Access to and from the canyon will be along Johnny Johnson's farmland roads. The $250,000 to $320,000 costs for construction of access roads identified in the appendices are grossly inflated. EPA and UDEQ have also not determined whether the treatment of excavation water will be necessary. Since the overall costs also include the DOE contractor oversight we believe that each alternative may be overestimated by $500,000.

Response: *Revisions similar to those made to Table ES-3 were made to Table ES-7 (implementability, cost of institutional controls listed as a range, and ARARs evaluation)*

The cost of the haul roads was too high and was modified. Access to and from Lower Montezuma Creek may be by John Johnson's farm roads (the road on the south side of the creek) or may be from the north side of the creek. A dump truck (even a small dump) will not be able to go down or up the road on the south side of the creek without being restrained or pulled by a dozer. DOE contractor oversight costs remain in the estimate because this is a cost DOE will incur. Also, although it has not been determined whether the water pumped for dewatering will require treatment, the cost should be included in the estimate for the AA in case treatment is required.

14. **Page xxvii, Recommended Removal Actions, Middle Montezuma Creek, fourth sentence**: The background risk for Upper Montezuma Creek is given here for comparison to the residual RME risk for Middle Montezuma Creek. Since there is no clear reason to compare these numbers, please delete reference to the Upper Montezuma Creek background risk.

Response: *Reference to Upper Montezuma Creek was deleted.*

15. **Page xxvii, Recommended Removal Actions, Lower Montezuma Creek, fourth sentence**: See comment number 14.

Response: *Reference to Upper Montezuma Creek was deleted.*

16. **Page xxvii, Recommended Removal Action**: EPA and UDEQ remain concerned about the "No Action" alternative proposed for properties MG-00990 and MG 01033 in the upper canyon. This neither addresses ALARA nor provides for the long term institutional controls necessary to keep the floodplain as a greenbelt. DOE needs to revise this section based on our discussions at the FFA meeting in September and per our specific comments to Section 9.0 (see below).

    Response: *The recommended actions for Upper and Lower Montezuma Creek will be revised to reflect the remedy agreed to by DOE, EPA, and the State.*

17. **Page 1-1, Section 1.1, Introduction, Purpose and Scope, 4th paragraph, Last sentence:** Most readers of this text will not have this document available. A discussion of the remediation technologies to be utilized should be included in this document. Furthermore, EPA and UDEQ do not accept the premise that the specifications for remediation of OU II properties that were developed in the Monticello Mill Tailings Site Record of Decision are acceptable for remediation in the wetland and riparian areas along Montezuma Creek. Environmentally sensitive techniques utilizing small equipment will be necessary. Specifications for remediation and reclamation will need to be more prescriptive than the specifications which were developed for other OU II properties.

    Response: *The paragraph was misleading by indicating that the technologies are not discussed in this document (they are discussed in Section 5). The paragraph was not necessary and, therefore, was deleted.*

18. **Page 2-1, Section 2.1, Nature and Extent of Soil and Sediment Contamination, second paragraph, first sentence**: Reference is made to Section 4.4 of the RI, yet such a section does not exist in that document. Perhaps DOE meant Section 4 in general. Please correct.

    Response*: The reference to Section 4.4 was corrected to reference Section 4.3.*

19. **Page 2-1, Section 2.1, Nature and Extent of Soil and Sediment Contamination, third paragraph, last sentence**: Perhaps DOE would like to specify "above background" regarding the 40 CFR 192 standards.

    Response: *The last sentence was revised to specify "above background."*

20. **Page 2-2, Section 2.1.1, Upper Montezuma Creek:** Please clarify whether the 18 microroentgens per hour gamma exposure-rate contour, which approximates a 5 picocuries per gram concentration, is above background.

    Response: *The phrase "above background" was added to the 5 pCi/g reference.*

21. **Page 2-15, Section 2.1.3 Lower Montezuma Creek, Soil Contamination in Lower Montezuma Creek, 1st complete sentence**: Please clarify if samples were taken in the rugged canyon (i.e., more than 3000 feet below the confluence of Vega and Montezuma creeks.

Response: *Samples were not taken within the rugged part of Montezuma Creek because of the inaccesability of this area. The sentence was changed to indicate that samples were not taken in the area of Montezuma Creek immediately below the lower boundary of Lower Montezuma Creek, but that results of samples taken within the Lower Montezuma Creek boundary and near the confluence of Verdure Creek with Montezuma Creek confirmed that Ra-226 soil contamination did not extend below the boundary of Lower Montezuma Creek.*

22. **Page 2-19, Section 2.1.3 Lower Montezuma Creek, Soil Contamination in Lower Montezuma Creek, last sentence of section**: This is an example of an instance where DOE attributes high nitrate and sulfate concentrations to sources other than the millsite. In light of recent analytical results from leachate within the repository, DOE needs to reexamine the data and assumptions for this position. The possible sources of nitrate and sulfate should be discussed fully in the OU III Remedial Investigation and in this document. Other mention of these constituents within the document may then reference the more complete discussion.

Response: *Discussion of other possible sources was added to Section 2.1.1 under* ***Soil Contamination in Upper Montezuma Creek****. The last sentence of Section 2.1.3,* ***Soil Contamination in Lower Montezuma Creek****, references the discussion in Section 2.1.1.*

Although high levels of nitrate are found in the repository leachate, nitrate does not appear to be a significant contaminant of soil and sediment in the OU III area. The comparison of reference area data with OU III Soil and Sediment Area data made in the RI suggests the two populations are similar. In addition, there is little or no correlation between Ra-226 and nitrate concentrations which suggests a distribution of nitrate independent of Ra-226, indicating a potential secondary source.

23. **Page 2-21, Section 2.2 Human Health Risk Assessment, sixth paragraph:** It is important to discuss the Central Tendency Exposure Scenario and indicate how it was developed.

Response: *Additional discussion on RME and CT was added to this section.*

24. **Page 2-23, Section 2.2 Human Health Risk Assessment, third paragraph:** Delete the reference to the DOE Proposed Regulation. The EPA and DOE proposed regulation should be deleted throughout the document. Include reference to the recently promulgated NRC regulation. The NRC regulation should also be included in the ARARs analysis.

Response: *Reference to the DOE proposed regulation was deleted and replaced with reference to the NRC standard of 25 mrem/yr specified in the Federal Register was added.*

25. **Page 2-27, Section 2.3.1 Ecological Effects and Risk Characterization, Table 2.3.1-1**: Please revise footnote a to read: "The total HI (RME/NOAEL-based) for mule deer is greater than 1.0 but no one COC and exposure pathway has an HQ greater than 1.0." Also, please include in footnote b references to the data supporting the assertion made in footnote b.

Response: *Footnote 'a' has been revised as requested. Footnote 'b' has been revised to read "Cobalt was the only COC that had an HQ greater than 1.0; however, cobalt was not detected in any surface-water sample (analytical results of surface-water sampling are presented in Appendix C-1 of the RI). HQs greater than 1.0 for cobalt are artifacts of detection limits greater than the toxicity benchmark."*

26. **Page 2-27, Section 2.3.2 Receptor-Specific Risk, Deer Mouse, second paragraph**: The explanation given here which concludes with actual risk being "of no concern" is full of conclusions which have no logical basis, for example "The sampling bias toward contaminated areas of OU III has a strong effect on the risk calculations for the deer mouse because of its small home range." Please revise this paragraph taking into consideration comment number 4 above and comments previously submitted on the ERA.

Response: *The text has been revised to include discussion on individual and population-level effects and to be consistant with comment #4.*

27. **Page3-1, Section 3.0 Applicable or Relevant and Appropriate Requirements**: The Remedial Investigation has been completed in draft form and at this stage in the process DOE should know the status of each regulation and whether or not it will apply to the alternatives analyzed. Furthermore, the comparison of alternatives must indicate how each alternative will meet such applicable or relevant and appropriate requirements. DOE needs to review the document entitled "ARARs Explained in Twelve Pages" and the CERCLA Compliance with Other Laws Manual, which will provide clarification on how to modify this section.

Response: *The word "potential" was removed from the section. The "Compliance with ARARs" portions of the detailed analysis of alternatives sections (Sections 6.4, 7.4, and 8.4) was expanded to generally describe how each alternative will comply with specific ARARs.*

28. **Section 3.0 Applicable or Relevant and Appropriate Requirements, Pages 3-1 through 3-14**: Please refer to the comments sent by UDEQ on July 15, 1997 regarding the ARARs for the OU III Remedial Investigation. Also, the State of Utah Drinking Water Rules and Groundwater Protection Rules cannot be eliminated as potential ARARs for the soil and sediment portion of OU III until it has been shown that soil and sediment do not contribute significantly to the contamination of these media to trigger these rules.

Response: *Comments made on ARARs in the RI were incorporated into this document. Also, the State of Utah Drinking Water Rules and Groundwater Protection Rules were added as ARARs.*

29. **Section 3.1 Potential Federal ARARs, UMTRCA 40 CFR Part 192, page 3-5**: This section should address the applicability of the 40 CFR Standards. If DOE intends to address the issue as to whether or not the 40 CFR Part 192.12 standard was promulgated with the intent to address vacant land which would not become residential property, this is the appropriate place to do so. Furthermore, this is an appropriate section to discuss in detail supplemental standards and whether or not they apply.

Response: *A discussion on supplemental standards was added. DOE does not intend to dispute that 40 CFR 192 is relevant and appropriate.*

30. **Section 3.3, To be Considered Criteria**: The discussion on To Be Considered Criteria is inadequate. See page 1-76 of the CERCLA Compliance with Other Laws Manual for an appropriate discussion. Please indicate that both the EPA 40 CFR 196 regulations and the DOE 10 CFR 834 regulations have been pulled back from the Office of Management and Budget. However, DOE should discuss and reference a similar regulation promulgated by the NRC.

Response: *Reference to the proposed EPA and DOE regulations was revised and discussion of the NRC standard of 25 mrem/yr was added. The explanation of TBCs also was revised.*

31. **Section 4.0, Remedial Action Objectives and Preliminary Remediation Goals, page 4-1, 2nd paragraph :** It states here that the Hazard Indices from exposure to soil and sediment do not exceed 1, but in section 2.3.2, Hazard Indices from all sources exceed 1 for the deer mouse. However, the contribution of soil and sediment to the total is not given. Please explain and/or correct as necessary.

    This section would provide another opportunity to discuss the development of the Central Tendency Exposure (CTE) scenario and indicate why the CTE scenario may also be a conservative estimate of the exposure.

    More can be added about the ecological risk to justify only developing PRGs for human health risk. DOE made a stronger argument in the Executive Summary which should be expanded upon.

    Response: *The HIs referenced in the paragraph refer to human health HIs and not ecological HIs. The paragraph was revised to clarify the HIs as human health HIs. Additional discussion was added concerning the development of the CTE. A discussion of ecological risk similar to that in the executive summary was added to this section.*

32 **Section 4.2, Preliminary Remediation Goals, page 4-2, 3rd paragraph:** The text states that the 40 CFR 192 standards are the "lowest risk level above background that can be achieved." This is not true. UDEQ suggests wording such as "lowest level above background which may be practical." In the comparison of alternatives within sections 6-8, the 40 CFR 192 standards are referred to as the lowest standards above background possible. In these cases also, "possible" should be replaced with wording such as "practical."

Response: *The wording was revised as suggested.*

33. **Section 4.2 Preliminary Remediation Goals, Page 4-3, first complete paragraph of page, last sentence**: The text states that Preliminary Remediation goals will be evaluated for ecological effects, but doesn't state when. This should be part of the alternatives analysis.

Response: *As worded, the last sentence was confusing and did not add to the explanation of ecological risk. Therefore, the sentence was deleted because an evaluation of ecological effects is already a part of the alternatives analysis.*

34. **Section 5.0, Remedial Technology Types:** DOE needs to rethink this entire section understanding that any construction in the eastern segment of the upper canyon and any construction in the middle canyon will be conducted in an environmentally sensitive manner. Existing farm roads and access roads will be utilized to the maximum extant possible. Small dumps (5 to 7 yard capacity) and small equipment (bobcats or smaller) will be used in environmentally sensitive areas. This will not be the typical cleanup that has occurred on the peripheral properties nearer the millsite.

Response: *The section was revised to discuss the need for environmentally sensitive remediation technologies in specific areas of Montezuma Creek. The existing technologies that are described in the section remain, since remediation done in Upper Montezuma Creek (upstream of the Beaver Pond area) will be done with conventional technologies.*

The introduction to this section was revised to reflect the need for environmentally sensitive remediation techniques in some areas and traditional technologies in other areas. Also, reference to limiting technologies to those considered for OU II was deleted.

35. **Section 5.1.1, Excavation , page 5-1**: As indicated in an earlier comment this discussion is considered inadequate. Furthermore, EPA does not agree that the specific type of excavation will depend on the preference of the contractor performing the work. DOE will be required to develop specifications for remediation (environmentally sensitive excavation techniques) on a property by property basis to mitigate impacts to the environment.

Response: *The existing discussion on excavation was modified to explain that it can only be used on areas that do not require environmentally sensistive remediation techniques. A discussion on environmentally sensitive excavation was added.*

36. **Section 5.2.3, Dewatering, page 5-3, 3rd paragraph:** The first two sentences are double talk. Pond 3 and the treatment plant need to be removed prior to closure of the repository as contaminated materials are present beneath the liner of the pond. DOE needs to sequence the construction clean up of OU III soils and sediments and the relocation of the WWTP and cleanup of the contaminated material beneath the pond in a cost efficient and environmentally sound manner so that DOE continues to meet all ARARs.

Response: *The first two sentences were left in but revised to explain the general concept of why dewatering may be required. The 2nd and 3rd paragraphs were revised to indicate that water pumped from the excavation* ***may*** *need to be treated before it can be discharged back to the stream and to emphasis the points made in the comment.*

37. **Section 5.2.4 Haul Roads, page 5-3:** EPA does not concur with the assertion that haul roads need to be constructed. Access to the Upper Canyon is available on unimproved roads with the exception of access to the lower beaver pond area. Access to the Lower Canyon is possible along unimproved roads on Johnny Johnson's property. Both areas will require the construction of stream crossings to reach contaminated material. EPA does concur that developing access roads to the Middle Canyon would result in significant environmental damage.

Costs associated with the construction of access roads appear to be greatly inflated. DOE may wish to put these contracts out as small business set asides as they will not require large construction equipment.

Response: *The paragraph was revised to more accurately describe haul roads that will be needed. Access to Upper Montezuma Creek is available from unimproved roads but a small length of haul road will be needed for the lower portion (hauls roads do not exist from approximately 700 feet upstream of the lower beaver pond to the lower end of Upper Montezuma Creek). Access to Lower Montezuma Creek could be by roads on John Johnson's property or from a road that enters the canyon from the north side. The final route will be determined during the design phase.*

The cost estimates were revised to more accurately reflect the length of haul roads required.

38. **Section 5.2.5, Water Treatment, Page 5-3**: EPA questions whether the statement to move the Treatment Plant to pond 4 has been carefully thought out. If active restoration of the aquifer (hot spot remediation) is the remedy selected for Surface and Ground-water OU III, then a better location would appear to be down gradient of the Millsite so as to avoid pumping and/or tanker transport of contaminated surface and ground water to the pond 4. Please also confirm the design capacity of the treatment plant, it is EPA's understanding that the design capacity is 100 gpm.

Response: *As written, the discussion incorrectly indicates that a decision has been made to move the treatment plant to Pond 4. The decision of where to move the treatment plant, if required, has not been made. The text was revised to indicate potential areas where the treatment may be moved, such as downgradient of the millsite. The design capacity of the*

*treatment plant is approximately 60 to 100 gpm, depending on influent concentrations, and the text was modified accordingly. Also, the paragraph was revised to indicate that water **may** be treated (instead of "will" be treated) before being discharged back to Montezuma Creek.*

39. **Section 5.3, Institutional Controls, page 5-3**: Please explain the purpose of the institutional controls. "They are implemented to ensure that the remedy is protective of human health and the environment". The lead agency, in this case the DOE, has a requirement under CERCLA to make certain that the remedy is protective.

    Zoning ordinances administered through the city or county are also viable institutional controls and should be added to the list. DOE should place them in order of the impact upon the land owner from the least impact to the greatest impact. Zoning Ordinances, Deed Annotation, Restrictive Easement, and Purchase of Land.

    Response: *The phrase "They are implemented to ensure that the remedy is protective of human health and the environment." was added the the introductory paragraph. A subsection describing zoning ordinances was added to the section. Also, the order of the subsections was changed as suggested (i.e., Zoning Ordinances, Deed Annotation, Restrictive Easement, and Purchase of Land).*

40. **Section 5.4.2, Reestablishment of Wetlands, page 5-4:** EPA would expect that monitoring the reestablishment of wetlands along Montezuma Creek, as well as within the millsite, will require more than three years. In fact as DOE has recognized elsewhere in the document it may require in excess of ten years to stabilize the disturbed creek bed and banks.

    Response: *The text was revised to indicate that restoration will probably take longer than 3 years in some areas (estimated at 3 to 10 years) and that restoration will be monitored during the restoration period.*

41. **Section 6.1, Alternatives Development , page 6-1:** Please correct this section as only one technology is discussed in Section 5.0. The technology discussed is excavation. A number of methods to conduct the excavation technology are discussed in Section 5.0.

    Response: *The paragraph was revised to mention the "excavation methods" described in Secion 5.0 and also mentions the other measures required for remediation (i.e., control of releases during remediation, institutional controls, and post-remediation activities).*

42. **Section 6.1, Alternatives Development , Limited Action, page 6-1:** Delete the term limited action and differentiate between the "No Action" and the "Institutional Controls". In the discussion and comparison of alternatives DOE needs to address the range of institutional control options.

***Response**: The term "limited action" was deleted from the text and the no action and institutional control alternatives are discussed separately. The discussion of the institutional control alternative was revised to discuss the range of institutional control options.*

43. **Section 6.1, Preliminary Alternatives 1 - No Action , page 6-2:** Please note that even if the **No Action** alternative is selected, there would most likely be a requirement (because contamination above the 40 CFR 192 clean-up standard will be left in place) to review the remedy at 5 year intervals to make certain that it remains protective.

***Response:** The description of the no action alternative was revised to indicate the a 5-year review may be required.*

44. **Section 6.1, Partial-Remediation Alternative, page 6-2:** DOE needs to be careful in the discussion of partial remediation. The next several pages become confusing. The Partial Remediation Alternative is more appropriately labeled Remediation to an Alternative Cleanup Level. All of the remediation alternatives discussed could be partial remediation alternatives (i.e., if the decision is to exclude some areas that are contaminated). This section should clearly indicate that the remediation alternative is a remediation to a standard other than the 5/15 standard (An Alternative Clean-up Level). The discussion in the third paragraph indicating that the alternative that has the most beneficial risk reduction compared to the cost of remediation will be used for the detailed analysis should be saved for Section 6.2.

Variations of this remediation alternative are whether the clean up is to occur only at the surface to a depth of one foot, or throughout the contaminated profile.

***Response:** The description of the "partial remediation" alternative was revised to "remediation to an alternate cleanup standard." The text was revised to clarify that this alternative involves a cleanup standard that is different from 5/15 pCi/g Ra-226. The discussion in the third paragraph about "the alternative that has the most beneficial risk reducation compared to the cost of remediation" was moved to Section 6.2.*

Discussion about the variations of the depth of remediation was added to the alternative.

45. **Partial-Remediation Alternative, page 6-2, third paragraph, third and fourth sentences**: UDEQ and EPA do not agree with the concept of limiting partial remediation to one foot in-depth. DOE has given various statistics showing how typically 90% of the contamination is at depths of one foot or less and generally this is true. However, from examination of the maps showing nature and extent of contamination, there are several areas where the contamination is deep and extensive in area. Additional environmental damage resulting from excavating deeper than one foot in an area already excavated would be negligible. Removing contamination at depth further reduces sources of contamination for redeposition or

contribution to ground and surface water degradation. Note: This comment also applies to the corresponding parts of Sections 7 +8.

Response: *The partial remediation option (now known as "remediation to an alternate cleanup level") was revised to have the depth of excavation based on the 15 pCi/g Ra-226 activity level. The text throughtout Sections 6, 7, and 8 was revised to reflect this change.*

46. **Section 6.1, Remediation to 5/15 pCi/g Ra-226 Alternative, page 6-3:** See previous comment. As discussed herein Alternative 4 is a partial-remediation alternative.

    2nd paragraph: Preliminary Alternative 4: Please clarify the first sentence. Should it read "excluding the" pond area.

    EPA and UDEQ believe that there are advantages to considering the remediation of several ponds in the upper canyon to control siltation that will result from remediation in wetlands and along the stream bank. These ponds should be identified and remediated prior to the remediation of up gradient areas and be cleaned out as necessary and/or when vegetation has been reestablished. Contaminated material from the ponds should be placed in the repository.

    Response: *The term "partial remediation" has been deleted from the report.*

    The words "pond area" should not have been included in the sentence and have been deleted.

    The ponds are one measure for control of siltation and will be considered as a measure to control siltation during the design. Other measures such as temporary dams, rerouting the creek, and silt fences will likely be used during the construction. The design will describe how DOE plans to control siltation during construction, including how the ponds will be used and when they will be remediated. This level of detail was not be included in the Alternatives Analysis but will be included in the design and EPA and the State will be able to comment on the design.

47. **Section 6.2 Alternatives Screening, Effectiveness, Table 6.2-1, page 6-4**: Please include the 5/15 pCi/g cleanup standard in this table for comparison purposes. Note: This comment also applies to the corresponding parts of Sections 7 and 8.

    Response: *Table 6.2-1 is intended only to compare different cleanup levels for Preliminary Alternative 3. The paragraph preceding the table was revised to clarify that the table is only to compare different cleanup levels for alternative 3 and to let the reader know where a comparison of all alternatives can be found. This change also was made to Sections 7.2 and 8.2.*

48. **Section 6.1, Alternatives Screening, Implementability, page 6-5:** EPA believes that the inherent problem associated with the reconstruction of wetlands although technically feasible deserves some discussion in this section.

Response: *Discussion about the difficulty of reconstructing wetlands was added to Section 6.2 under Implementability evaluation. The discussion was also added to Sections 7.2 and 8.2.*

49. **Section 6.3 Description of Alternatives, Table 6.3-1, Alternative 4, Option B page 6-6**: The excavation area (4.6 acres) and volume (8,300 yd^3) given here are the same as in Alternative 4, Option A. This cannot be correct. Table 6.5-1 gives an excavation volume of 34,700 yd^3 for option B, but no area. Please verify and provide the correct values.

Response: *Table 6.3-1 was revised to correct the volumes and areas.*

50. **Section 6.3, Upper Montezuma Creek Alternative 2, page 6-6:** The discussion of institutional controls is inadequate. The text should be rewritten to address the institutional controls in the order of impact to the private land owner from least intrusive (supplemental standard with deed annotation) to most intrusive (DOE purchase of the property). DOE must also address the option of giving the property to the State of Utah, Division of Wildlife Resources. DOE has a letter in their files indicating that the State has an interest in the middle and lower canyon properties. This option also reduces some of DOE's long term administrative concerns.

Response: *The discussion of institutional controls was expanded to include (in order of discussion) zoning ordinances, deed annotation, restrictive easements, and purchase of land. These revisions were also made to Sections 7.3 and 8.3. DOE agress that if the land were purchased and transferred to another agency (such as the Utah Division of Wildlife Resources), DOE's costs would be reduced. However, assuming the agency that received transfer of the land would have the same requirements for LTSM as DOE, the LTSM costs of the alternative would not be reduced.*

51. **Section 6.3 Description of Alternatives, Upper Montezuma Creek Alternative 3, page 6-7, second paragraph**: See general comment pertaining to the accuracy of distances delineated on the figures and in the text (1,400 feet versus 1,800 feet or 2,200 feet).

Response: *Reference to the pond area have been revised to be "the area between E 30600 to E 31800" throughout the document.*

52. **Section 6.3 Description of Alternatives, Upper Montezuma Creek Alternative 5, page 6-9, first paragraph, first sentence**: The risk values for this alternative given in other parts of this document are 3.1×10^{-5} and 3.1×10^{-6} for the RME and CT ILCR respectively. Please correct.

Response: *The risk values were corrected as shown.*

53. **Section 6.3 Description of Alternatives, Upper Montezuma Creek Alternative 5, page 6-9, second paragraph**: See general comment pertaining to the accuracy of distances delineated on the figures and in the text (1,400 feet versus 1,800 feet or 2,200 feet).

Response: *Reference to the pond area have been revised to be "the area between E 30600 to E 31800" throughout the document.*

54. **Section 6.4.1, Long Term Effectiveness and Permanence, page 6-17, 2nd paragraph:** EPA and UDEQ do not concur with the statement that "a five year review will not be required." DOE should reword this paragraph to indicate that a five year review may be required.

Response: *The paragraph was revised to indicate a five-year review may be required because contamination was left on site.*

55. **Section 6.4.2, Upper Montezuma Creek Alternative 2 - Institutional Controls , Compliance with ARARs, page 6-18:** The first two sentences of the third paragraph should be deleted and a reference made to the NRC regulation which has been promulgated.

Response: *The Compliance with ARARs section for all alternatives has been revised. Discussion of the NRC and DOE regulations has been deleted. The NRC regulation is a TBC and is used as a benchmark for residual exposure levels. Discussion of the NRC regulation was added to the Protection of Human Health and the Environment.*

56. **Section 6.4.3 Upper Montezuma Creek Alternative 3, Short-Term Effectiveness, Protection of the Community and Workers During Remedial Action, Air Quality, page 6-22**: The statement "the potential increase in dust would be minimized by the application of water sprays" is not sufficient. DOE has a responsibility to **prevent** dust generation in contaminated areas, not **minimize** it. Please change the wording here to reflect that goal. Note: This comment also applies to other parts of Sections 6, 7, and 8.

Response: *The paragraph was revised to reflect the goal of prevent dust generation in contaminated areas. DOE also made this revision to Alternatives 4 and 5 in Section 6, Alternatives 3 and 4 in Section 7, and Alternatives 3 and 4 in Section 8.*

57. **Section 6.4.3, Upper Montezuma Creek Alternative 3 - Partial Remediation, Environmental Impacts, page 6-24, 2nd paragraph:** The discussion regarding topsoil should be deleted. EPA does not concur with the paragraph and we have also indicated in the past that DOE's purchase of topsoil from off-site properties where there are no controls for

reclamation are environmentally unsound practices. DOE has ample topsoil on lands purchased for the placement of the repository (i.e., near south site and areas east and northeast of the repository. DOE can easily modify the contract to require that the soils be obtained from government (DOE) owned lands.

Response: *The paragraph discussing topsoil was deleted. DOE also made this revision to Alternatives 4 and 5 in Section 6, Alternatives 3 and 4 in Section 7, and Alternatives 3 and 4 in Section 8.*

58. **Section 6.4.3, Upper Montezuma Creek Alternative 3 - Partial Remediation, Environmental Impacts, page 6-24, 5th, paragraph:** This is the first mention of the northern goshawk. Has the RI been changed to include the concern for the goshawk.

    Response: *The RI has been revised to include the northern goshawk as a state-sensitive species in the discussion of wildlife in Section 2.6.*

59. **Section 6.4.3, Upper Montezuma Creek Alternative 3 - Implementability , page 6-25, 1st paragraph:** Delete the second sentence. It has no meaning to most readers.

    Response: *The second sentence was deleted, as suggested. This revision also was made to Alternatives 4 and 5 in Section 6, Alternatives 3 and 4 in Section 7, and Alternatives 3 and 4 in Section 8.*

60. **Section 6.4.3, Upper Montezuma Creek Alternative 3 - Cost , page 6-26, 2nd complete sentence:** See previous comment regarding the depth of excavation for partial remediation alternatives.

    Response: *The sentence was deleted. DOE also made this revision to Alternative 3 in Section 7 and Alternative 3 in Section 8.*

61. **Section 6.4.4, Upper Montezuma Creek Alternative 4 - Compliance with ARARs, page 6-27:** See comment for Section 6.4.2 regarding the EPA and DOE proposed regulations.

    Response: *The Compliance with ARARs section for all alternatives has been revised. Discussion of the NRC and DOE regulations has been deleted. The NRC regulation is a TBC and is used as a benchmark for residual exposure levels. Discussion of the NRC regulation was added to the Protection of Human Health and the Environment.*

62. **Section 6.4.4 Upper Montezuma Creek Alternative 4, Long-Term Effectiveness and Permanence, page 6-28, third paragraph, last sentence:** The discussion here focuses on an event of high water flow as the only mechanism which could expose contaminated material

not remediated. Please add discussion of stream path changes under normal flow which could expose contamination, and the deposition of contamination downstream whether under high-flow or normal-flow rates. Note: This comment also applies to other parts of Sections 6, 7, and 8.

Response: *The discussion was revised to also mention that stream path changes under normal flow conditions could expose contamination and transport and deposit the contamination downstream. The revisions also were made to Alternative 3 in Section 6 and Alternative 3 in Section 7 and Alternative 3 in Section 8.*

63. **Section 6.5, Table 6.5-1 Comparison of Alternatives for Upper Montezuma Creek Alternatives 4 - Compliance with ARARs, page 6-40:** Discussion of deed annotation and the LTSM should be included in the table where appropriate (probably should be included in the Long Term Effectiveness and Permanence discussion).

    Somewhere in the text DOE needs to discuss in detail the institutional control and the LTSM.

    Response: *Reference to LTSM as a requirement for Alternatives 2, 3, and 4 was added to the table under Long-Term Effectiveness and Permanence. Reference to a deed annotation was not added to Alternatives 3 or 4 because these alternatives do not include an institutional control, such as a deed annotation. The proposed remedy for Upper Montezuma Creek includes an institutional control (a deed annotation) because it is a combination of Alternatives 2 and 3.*

    Deed annotations are discussed as part of the evaluation for Alternative 2. The requirement for LTSM is included in the discussion of Alternatives 1, 2, 3, and 4.

64. **Section 6.5.5, Short Term Effectiveness, page 6-42:** Comparison of impacts to wetlands and environment needs to be addressed in greater detail. Concern for continued erosion in hot spots and the time to get wetlands reestablished needs to be emphasized.

    Response: *More discussion was added about the effect each alternative would have on wetlands. Also, the difficulties in reestablishing wetlands and revegetating excavated areas was added to the text. These revisions also were made to Sections 7 and 8.*

65. **Section 7.0, Middle Montezuma Creek Canyon:** Comments similar to those identified for the Upper Montezuma Creek apply to this section as well.

    Response: *Revisions made in Section 6 also were made in Sections 7 and 8, were applicable.*

66. **Section 7.1 Alternative Development, Partial Remediation Alternative, page 7-2, third paragraph, second sentence:** The statement "remediation to those cleanup levels would not provide any reduction in health risk" is not true unless no contaminated material was removed under each scenario. Please reword.

Response: *The sentence was changed to read "... remediation to those cleanup levels would provide minimal reduction in health risk."*

67. **Section 7.3 Description of Alternatives, Middle Montezuma Creek Alternative 2, page 7-6, first complete sentence of page**: Please replace with: "Institutional controls will not reduce the risk to human health under current conditions, but prevents future increases in risk due to changes in land use." Note: This comment applies to other parts of Sections 6, 7, and 8.

Response: *The sentence was modified as suggested.*

68. **Section 7.4.2 Middle Montezuma Creek Alternative 2, Overall Protection of Human Health and the Environment, page 7-11, first paragraph, last sentence**: The value given here for the RME effective dose equivalent caused by residual contamination is 0.2 mrem/yr. Alternative 1 previous to this gives a value of 0.4 mrem/yr. Please verify this value and correct.

Response: *The text was revised to reflect the correct value of 0.4 mrem/year.*

69. **Section 7.4.2 Middle Montezuma Creek Alternative 2, Long-Term Effectiveness and Permanence, page 7-12, first paragraph, fourth through sixth sentences**: The value of a deed annotation alone as noted, has limited value. That is why it was combined with a revised building code for the privately-owned properties where supplemental standards are being applied. Please include this as an option in this discussion. Note: This comment also applies to other parts of Sections 6-8.

Response: *The text in Sections 6, 7, and 8 was revised to include zoning ordinances (revised building codes) for privately-owned properties as an option to be applied with a deed annotation.*

70. **Section 7.4.2 , Middle Montezuma Creek Alternative 2, Long-Term Effectiveness and Permanence, page 7-12.** DOE needs to carefully distinguish between deed annotation and a restrictive easement. Restrictive easement provides for better protection as the DOE would have an ownership interest in the property. A deed annotation may not include ownership. Please note that this applies to the discussion of institutional controls elsewhere in the document.

Response: *The text in Sections 6, 7, and 8 was revised to distinguish between a deed annotation and a restrictive easement.*

71. **Section 7.4.3 Middle Montezuma Creek Alternative 3, Cost, page 7-19, first paragraph, fourth and fifth sentences**: Please discuss by what percentage the costs may have been overestimated.

Response: *The alternative was revised to require excavation to the 15 pCi/g Ra-226 standard. Because this revision will likely require a significant dewatering effort, the costs are no longer considered a conservative estimate.*

72. **Section 8.0, Lower Montezuma Creek Canyon , Partial Remediation Alternatives, page 8-2:** Please rewrite this section to include the 57 pCi/g Ra-226 clean up alternative. The Screening Recommendation discussion needs to be changed to address the 57 pCi/g Ra-226 clean up alternative.

Response: *The section was revised to include two options for the Remediation to an Alternate Cleanup Level Alternative (formerly Partial Remediation), a 35 uR/h and a 80 uR/h cleanup level.*

73. **Section 8.2 Alternatives Screening, Effectiveness, page 8-3, second paragraph, last sentence**: Please explain why all cleanup levels for Lower Montezuma Creek where some primitive roads already exist would require construction of 1,000 feet of new haul road. The 65 uR/hr cleanup level requires excavation of only 0.2 acres! This could be excavated with small equipment and hauled to a central location for loading into larger trucks for transport to the repository.

Response: *The estimate of haul roads was incorrect for Lower Montezuma Creek and has been revised.*

74. **Page 8-11, Section 8.4.2 Lower Montezuma Creek Alternative 2, Overall Protection of Human Health and the Environment, first paragraph, last sentence**: The baseline RME effective dose equivalent caused by residual contamination is given here as 0.4 mrem/yr. Elsewhere it is given as 0.6 mrem/yr. Please verify and correct.

Response: *The text was corrected to list the RME effective dose equivalent as 0.6 mrem/year.*

75. **Section 9.0, Recommended Removal Actions:** EPA and UDEQ would request that DOE prepare this section as proposed at the FFA meeting in September 1997 and subsequent telephone conversations. The rationale for selection of these recommended removal actions should be expanded as this section will be an integral part of the action memorandum.

For **Upper Montezuma Creek** the alternative should address the 18 pCi/g Ra-226 clean up alternative. It should also address the extension of the clean up to include the first major beaver pond. Deed annotation and Supplemental Standards should be included. A need for five year review(s) should also be addressed. Risk reduction and ALARA should also be mentioned.

EPA and UDEQ will concur on DOE's proposal for **Middle Montezuma Creek**. Since Supplemental Standards and deed annotation will be part of the recommended action it can remain in the action memorandum.

For **Lower Montezuma Creek** the alternative should address the 44pCi/g and the 57pCi/g (Ra -226) clean up levels.

Response: *The section was revised as proposed in the FFA and subsequent telephone conversations. The proposed alternative for Lower Montezuma Creek will only include one cleanup level, 80 uR/h (57 pCi/g Ra-226).*

76. **Section 9.0 Recommended Removal Actions, Upper Montezuma Creek, page 9-1, fourth paragraph, last sentence:** Please specify that the "landowner has not expressed a strong preference either for or against remediation."

Response: *The text was revised as suggested.*

77. **Section 9.0 Recommended Removal Actions, Middle Montezuma Creek, page 9-2, last sentence of page**: Please delete the reference to background risk in Upper Montezuma Creek. See also comment 14.

Response: *Reference to background risk was deleted from the text.*

78. **Section 9.0 Recommended Removal Actions, Lower Montezuma Creek, page 9-3, first paragraph, fourth sentence:** Please delete the reference to background risk in Upper Montezuma Creek. See also comment 14.

Response: *Reference to background risk was deleted from the text.*

79. **Appendix A**: The cost estimates for partial remediation include most of the costs for rerouting of the stream and dewatering of the excavation given in the full remediation alternatives. UDEQ feels that this inflates the cost estimates, especially when partial remediation as currently described only excavates to a depth of 12 inches, and the text indicates that groundwater may not be encountered at this depth of remediation. Please revise.

Response: *The partial remediation alternative (now called Remediation to an Alternate Cleanup Level) was revised to require excavation at depth to the 15 pCi/g Ra-226 standard. Calculation No. Q00057AA calculates the quantity and cost of dewatering that is used in the cost estimates. If the alternative was not modified to require excavation to the 15 pCi/g Ra-226 level, the estimate would have been reduced. However, the estimate was not reduced because the depth of excavation now will be based the 15 pCi/g Ra-226 level and the dewatering aspect of remediation has the most uncertainty.*

80. **Appendix B, Calculation Q00058AA**: DOE is still not addressing the issue that the remediation will be conducted in an environmentally sensitive manner and that the excavation equipment will be limited in size. Excavation costs should be based on the utilization of small equipment no larger than bobcats (large equipment may be appropriate in some areas of the Upper Montezuma Creek).

Response: *The "Problem Statement" in the calculation was revised to indicate the calculation is only intended to give a rough estimate of the rate of excavation. The rate of excavation is used to help estimate the excavation time used in the cost estimate. Also, the calculation was modified to indicate smaller equipment would be used for remediation of hot spots in Middle and Lower Montezuma Creeks.*

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Oversized Document – Located in File Drawer AR 609.

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Reference: U.S. Department of Energy. September1998. *Operable Unit III Remedial Investigation,* GJO-97-6-TAR, (GJO-MRAP-37), *prepared* by MACTEC-ERS for the U.S. Department of Energy, Grand Junction Projects Office, Grand Junction, Colorado.
Type: Report (seven volumes)
Location: Oversized document shelf